

From: ext Tim Johnson [<mailto:tjohnson@american tcb.com>]

To: 'ari.havela@nokia.com'; Gustafsson Tapio (NMP/Salo); Soderholm Hannu (NMP/Salo)

Subject: Review of FCC ID: PYANHL-4J

EMC Questions and answers

1) The following exhibits do not appear to be provided:

- a) Letter of Confidentiality (note several items were checked confidential when uploaded).
- b) Parts List
- c) Users Manual

Letter of confidentiality uploaded to additional information folder

Partlist uploaded to partlist folder

User manual uploaded

2) Information in this application states that the device is capable of GSM 900 and GMS 1800 outside of the US. Please explain what precautions are built into the device to keep this part of the device from functioning in the U.S.

This device is designed in a way that transmitter won't get activated unless a base station is available. GSM900 and GSM1800 are not available in USA.

3) Please provide a photograph that shows where the antenna is located within the phone. This can not be determined from the photographs.

Antenna location picture uploaded to internal photographs folder

4) The plot on page 73 of 94 seems to show a concern at the bandedge. Please provide an explanation and if necessary a plot with much smaller span near the bandedge with a slower sweep time.

The concern in the picture 44021JD01 029, page 73 of 94, is due to the functional error in the measuring equipment, probably error in plotter configuration or function. This can be verified with the picture 44021JD01 045, page 89 of 98. In the picture 44021JD01 045 the sweep end frequency is 1.9111 GHz and the signal level there is about -55 to -60 dBm, so the marginal to the limit is about over 40dB. The start frequency of picture 44021JD01 029 is 1.911 GHz so these two measurements are overlapping with 100 kHz in the band edge area concerned.

- 5) Please confirm if this device includes EDGE capabilities. It was noted that EDGE was seen in the block diagram. Please confirm the correct emissions designator for this device as required by CFR 1.1033(c)(4). Please note that (c)(4). Please note that the FCC asks for GSM to be listed as 300KGXW and EDGE as 300KG7W. See attached document for further information.

Nokia NHL-4J does not have the EDGE capability. The RFIC used in the transceiver have the EDGE capability but this function is disabled in Nokia NHL-4j transceiver by grounding the EDGE mode selection input permanently. The other control circuitry needed for the EDGE operation is also omitted from the Nokia NHL-4j PWB board.

SAR questions and answers

- 6) Please provide a confirmation that radiated power measurements were made for each SAR scan. Reported results appear to be identical to EMC reported values. Please provide full details including photographs of radiated power test used during SAR testing. If radiated testing was not performed during SAR testing please retest. Please note that conducted power measurements are preferred for SAR testing.

There is no external antenna connector available in PYANHL-4J, and therefore all power measurements are done radiated. Since SAR laboratory does not have possibility to do radiated power output measurements, a separate accredited EMC laboratory was used as mentioned in the SAR report. Since the same sample was used for both EMC and SAR measurements, radiated power measurements were re-used in SAR report. Measured values are therefore valid and true to our best capability.

- 7) The theory of operations mentions the maximum power class for this device (1900 MHz) is 1, while the SAR test report states 2 (page 6). Please explain

The maximum power class mentioned in the theory of operations is erroneous. Power Class 2 in SAR report is correct. Corrected theory of operation document uploaded.

- 8) Dipole Verification was performed at 1800 MHz. Note that recently the FCC has recently specified that the verification must be performed at 1900 MHz and is no longer accepting 1800 MHz . See slide presentation from October TCB training, page 4.

Conversion factors (body and head) of the probe have been calibrated for frequency 1900 MHz. Parameters of tissue simulating liquids have been measured at 1880 MHz. We understand that above meet the requirements stated in the slide presentation.

Supplement C states (paragraph System Verification) "When a radiating source is not available at the operating frequency range of the test device to verify system accuracy, a source operating within 100 MHz of the mid-band channel of each operating mode may be used." Dipole verifications carried out during the SAR evaluation meet this requirement.

- 9) For course scans, what was the probe tip distance to phantom inner surface?

Probe tip distance was 1.4 mm.

- 10) The FCC likes to be able to confirm that the 15 cm liquid depth was present by supporting test configuration photographs or Z-axis data that is measured to 15 cm. This supplemental information was not provided for the actual test. Please confirm that the liquid depth was at least 15 cm, and if available please provide the photograph.**

The shape of the Z-axis plots show, that there were no harmful reflections from upper surface of the liquid in the depth where the actual cube scanning took place. We confirm that the liquid depth was 15 +/- 0.5 cm during all measurements as stated in the SAR report.

- 11) During z-axis plots, the first 2 points should be made in the first 10 mm. This does not appear to have been the case for one of the z-axis plots.**

The problem is related only to the visualization software. The SAR scans have been performed correctly. Please see quotation from SPEAG correspondence:

We have carefully analyzed your problem. As predicted, it is just a problem of visualization. All data are assessed correctly. The surface is not at point 0 but at the location of the first triangle in the plot. This is a result of the measurement strategy implemented in DASY3 which has been completely revised in DASY4, i.e., DASY4 always evaluates the correct z-scan. Unfortunately, we are not able to fix this problem in DASY3 at this time.

In summary:

- The spatial peak SAR averaged over 1g and 10g are correctly evaluated
- The z-scan is correctly displayed. The location of the surface is at the first shown triangular point, i.e., the first extrapolated point is on the surface. Please be aware that the z-scan is normal to the coordinate system of the probe and not necessarily to the surface of the phantom.

- 12) The FCC prefers for all plots to be provided. Please provide a justification for not providing all plots. Note that if the channels tested for each configuration (left, right, cheek, tilt/ear, extended, retracted etc.) have similar SAR distributions, a plot of the highest SAR for each test configuration should be sufficient as long as this is stated; otherwise additional plots should be included to document the different SAR distributions in order to identify peak locations relative to device and phantom**

The SAR distribution plots are substantially similar or equivalent to the plots submitted regardless of used channel in each mode and position.

- 13) FYI, for body SAR the FCC prefers the use of 1.5 cm.**